



**ELECTROLUMINESCENT P-N JUNCTION DEVICE**

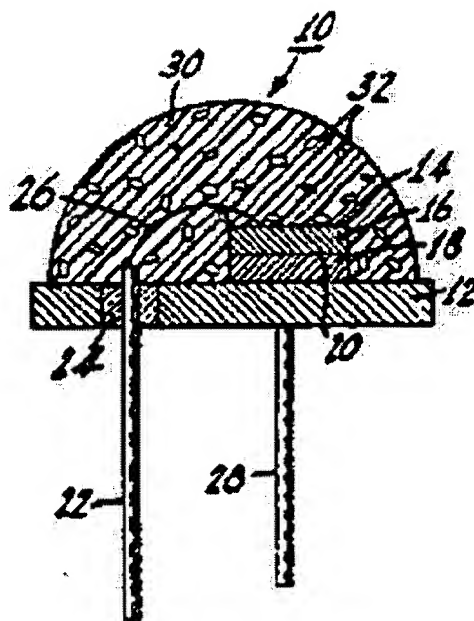
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**Applicant:** RCA CORP  
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Abstract of correspondent: **GB1332462**

1332462 Electroluminescence RCA CORPORATION 4 Dec 1970 [12 Dec 1969] 57842/70  
Heading C4S An electroluminescent device 10 for emitting radiation outside the visible spectrum comprises PN EL semiconductor element 14 emitting radiation outside the visible spectrum, encapsulant 30 transparent to the radiation from the s/c. element and to radiation within the visible spectrum and means, comprising phosphor particles 32 converting a small portion of the non-visible radiation to visible radiation as an indication that the device is emitting non-visible radiation. Phosphor 32 may emit visible light by a two or three photon absorption process and the particles may be in amount 0.5 to 1% or more by wt, of the particle plus encapsulant mixture. The encapsulant may be a hollow dome with the phosphor on its interior surface or dispersed within the non-visible radiation in the infra-red region and emitted by a PN-injection type s/c. element. Support 12 is a flat metal disc, soldered s/c. element 14 may be GaAs, InP or an InAs-GaAs mix. Washer 24 is an insulator such as glass or ceramic, dome 30 preferably has a high refractive index and may be of plastics e.g. epoxy, acrylic, polyester, or glycol phthalate plastics and low m.p. glasses. Phosphor 32 may include ions of rare earth crystals, e.g. Yb and Er or Yb and Ho in a host such as LaF<sub>3</sub>, Y<sub>3</sub>OCl<sub>7</sub>, BaYF<sub>5</sub> or BaLuF<sub>5</sub>.



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